STANDARD HORIZON®

FF525
INSTALLATION and OPERATION GUIDE

This guide relates to the following GPS CHART PLOTTERS:
CP180, CP180i, CP300, CP300i, CPV350, CP500 and CPV550.

For older GPS Chart Plotters, the manual is available for download at www.standardhorizon.com or by contacting Marine Product Support at 800-767-2450.

FCC Compliance Statement

This device complies with Part 15 of the FCC limits for Class A digital devices. This equipment generates, uses, and can radiate radio frequency energy and, if not installed or used in accordance with the instructions may cause harmful interference with radio communications.
There is no guarantee that interference will not occur in a particular instance. If this equipment does cause harmful interference to other equipment, try to correct the problem by relocating the equipment.

Consult an authorized STANDARD HORIZION dealer or other qualified service technician if the problem cannot be corrected. Operation is subject to the following conditions: (1) This device cannot cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

CAUTION

- The FF525 contains dangerous high voltage circuits which only experienced technicians can handle.
- STANDARD HORIZON will not be liable for errors contained herein, or for incidental or consequential damages in connection with the performance or use of this material.

WARNING

- When plugging in or unplugging a transducer to the FF525 make sure power is turned off.

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CODE: Issue A - 140109e

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1. INTRODUCTION

This chapter provides basic information in becoming familiar with the advanced functions of the FF525 before you start using it combined with the STANDARD HORIZON GPS Chart Plotters.

1.0 GENERAL INFORMATION

This Owner's Manual covers the Fish Finder functions of the FF525 when used with the STANDARD HORIZON GPS Chart Plotters.
The FF525 advanced features include:

- A-Scope (displays Sonar Echo in real time)
- Preset modes (Fish, Cruise)
- 2x and 4x Zoom (capability to magnify any part of the Fish Finder image of a fixed rate)
- Bottom Lock (capability to magnify a user defined range around the bottom)
- White Line (help distinguish between fish and bottom, when fish are swimming close to the bottom)
- Sensitivity Time Control (STC) reduces Surface Clutter shown on the display by reducing echoes from water disturbances
- Surface Noise Filter (suppresses the displaying of Surface Clutter)
- Interference Rejection (allows reducing interference from other boats/Fish Finders)
- Noise Filter
- Fish Symbol feature
- Transducer ID (automatically selects power output and parameters for best performance).
- Dual Frequency: 50 and 200kHz with the capability to display the two frequencies at the same time.
- Dual Power output: 600/1000W (4800/8000Wpp) depending on the transducer connected. Refer to Par. 3.0.7 "Optional Transducers ID Sensors".
- Max Depth*: 1KW - 1200Ft (365m) at 200kHz, 4000Ft (1219m) at 50kHz
  600W - 700Ft (213m) at 200kHz, 1500Ft (457m) at 50kHz
- Min Depth: 2.5Ft (0.8m) at 200kHz, 5Ft (1.6m) at 50kHz
- Max Typical*: 1KW - 980Ft (299m) at 200kHz, 2700Ft (823m) at 50kHz
  600W - 600 Ft (183m) at 200kHz, 1350Ft (411m) at 50kHz

NOTE*

This is not a guaranteed specification. The actual maximum depth capability of the system depends on the type of transducer fitted, the reflectivity of the bottom, water condition, etc.

- Speed Sensor (if available on transducer)
- Dual temperature inputs Sensor (One channel TEMP1, Optional second channel TEMP2) - if available on transducer
- Trip Log
- External buzzer connections (buzzer not supplied)
- Alarms - Shallow, Depth, Temp Upper, Temp Lower

NOTE

The following STANDARD HORIZON transducers will only operate with the FF525: DST520, DST521, DST523, DST525, DST526, DST527 and DST528.

Performance of the FF525 used in conjunction with optional transducers (sold separately) will vary based on water conditions, bottom composition, boat hull, vessel speed, installation, and specific transducer model. This includes but is not limited to both minimum and maximum depth performance.

1.1 PACKING LIST

When the package containing the FF525 is first opened, please check for the following contents.

1.1.0 Replacement Parts

Replacement part	Item
S8101640	Tee cable FF525
S8101641	Power cable FF525
EM040X100	Owner's Manual
XUAIR0029	DST521 Paddlewheel repair kit
XUAIR0030	DST521 Mounting bracket
XUAIR0018	DST526 Paddlewheel repair kit

1.2 CONVENTIONS

Through this manual you will see highlighted words. Please refer to the legend below:

[MENU]	If you see brackets around a bold and capitalized word this refers to a key press.
[CHART]	If you see brackets around a bold and lower case word this refers to a Soft Key press.
GENERAL SETUP	When a word(s) is bold capitalized and underlined, this refers to a menu selection item.

2. MOUNTING THE FF525

The FF525 must be properly installed according the following instructions to get the best possible performance.

NOTE

TRANSDUCER: refer to Chapter **3** and to the Installation Manual supplied with the Transducer.

2.0 INSTALLATION

The FF525 is designed to be mounted horizontally or vertically to enable it to be installed in the most convenient position. After the cables have been run, mount the FF525 in the desired location using the supplied hardware.

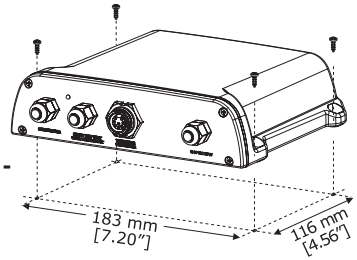


Figure 2.0 - The FF525 Installing

2.1 CONNECTIONS

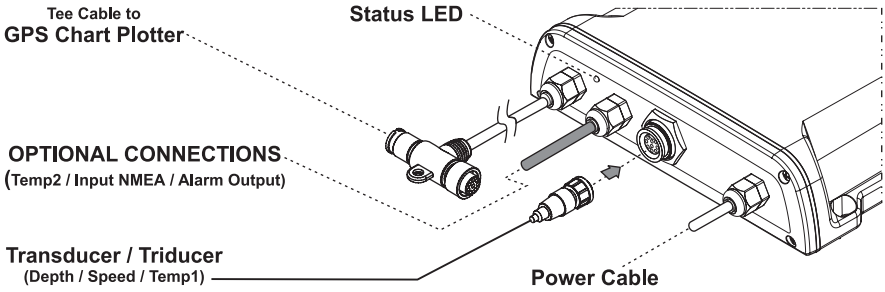


Figure 2.1 - The FF525

2.2 POWER CONNECTIONS

The installation of a switch is necessary to turn On or Off the FF525. Standard Horizon recommends connecting the FF525 and GPS Chart Plotter to the same power switch (not supplied) and fused source as shown in the following images below. Normally spare rocker switch on a dash is used.

2.3 GPS CHART PLOTTER CONNECTIONS

The FF525 is connected to Standard Horizon GPS Chart Plotters via the TEE Cable. Refer to the following images below.

2.4 TEE CABLE

If the Tee cable connector is too large to route through your boat, the FF525 can be opened to remove the cable for easier routing. Also if the Tee cable is not long enough cable can also be added.

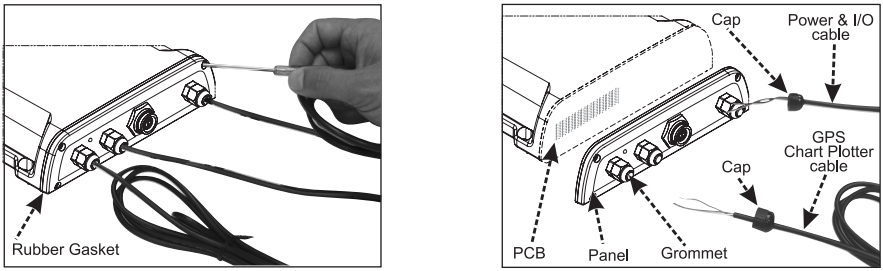
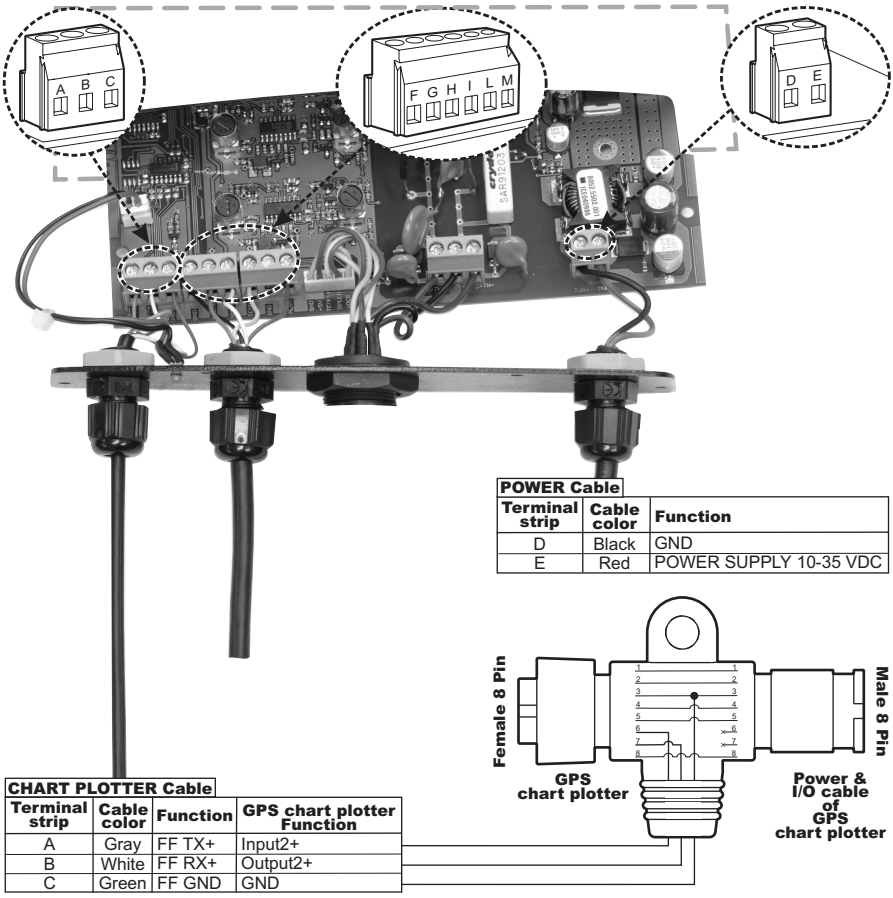


Figure 2.4 - Removing Power and Tee cables

WARNING

Before following the steps below, disconnect 12VDC from the FF525.

1. Open the FF525 box by unscrewing the four screws.
2. Once the screws are removed, pull out the panel and the Printed Circuit Board (PCB).
3. Losen and remove the Green, White and Gray wires from the terminal strip.
4. Then lossen the cap and pull the wires from the inside of the FF525.
5. Route the Tee cable as need through the vessel and or add additional cable if needed.
6. If the cap was removed, insert it onto the Tee cable, then insert the cable into the FF525.
7. Reinstall the wires into the terminal strip. From left to right with the wires are Gray, White and Green.
8. Tighten the cap to hold the Tee cable in place.
9. Push the panel towards the case (be sure to have the rubber gasket positioned correctly).
10. Close the FF525 box by reinstalling the four screws.



POWER Cable

Terminal strip	Cable color	Function
D	Black	GND
E	Red	POWER SUPPLY 10-35 VDC

CHART PLOTTER Cable

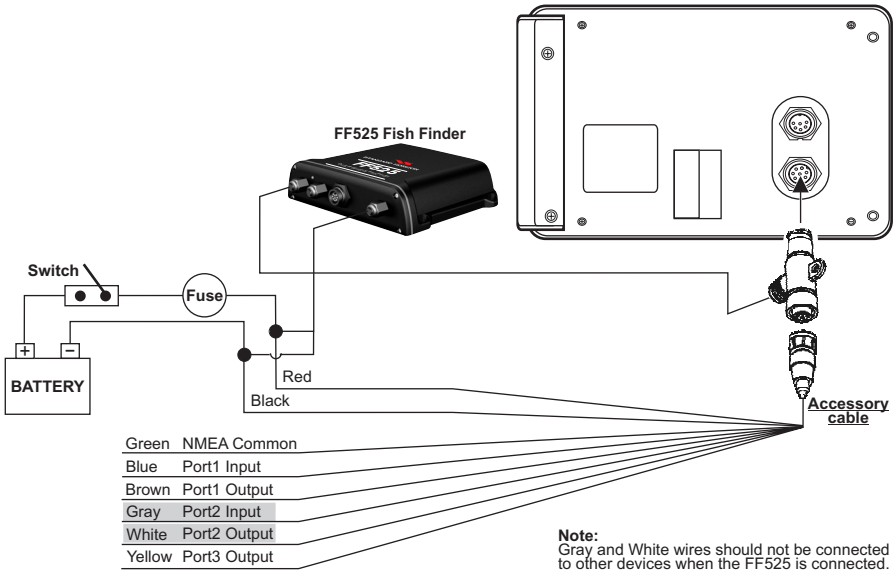
Terminal strip	Cable color	Function	GPS chart plotter Function
A	Gray	FF TX+	Input2+
B	White	FF RX+	Output2+
C	Green	FF GND	GND

Figure 2.4a - Internal connections

IMPORTANT

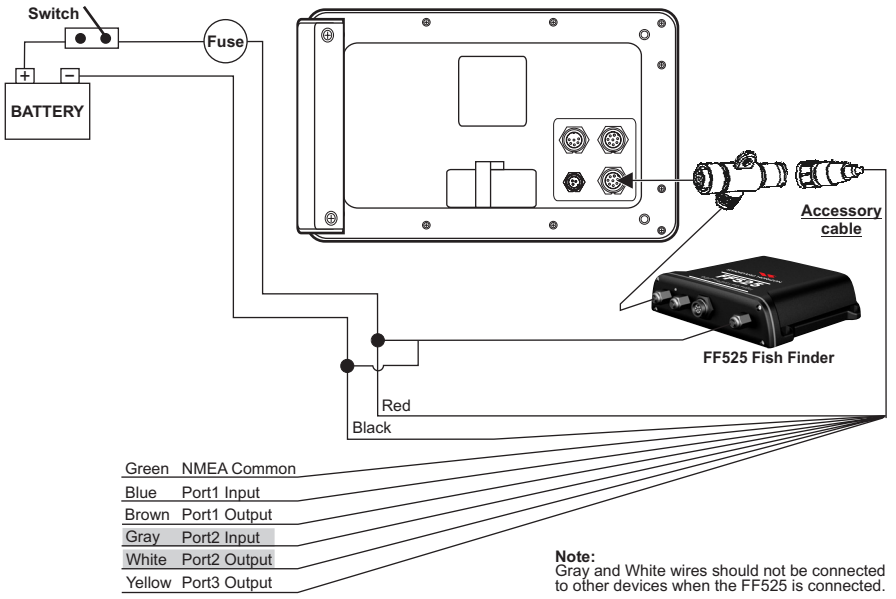
Refer to software setup section after connections have been made.

2.4.0 CP180 and CP180i



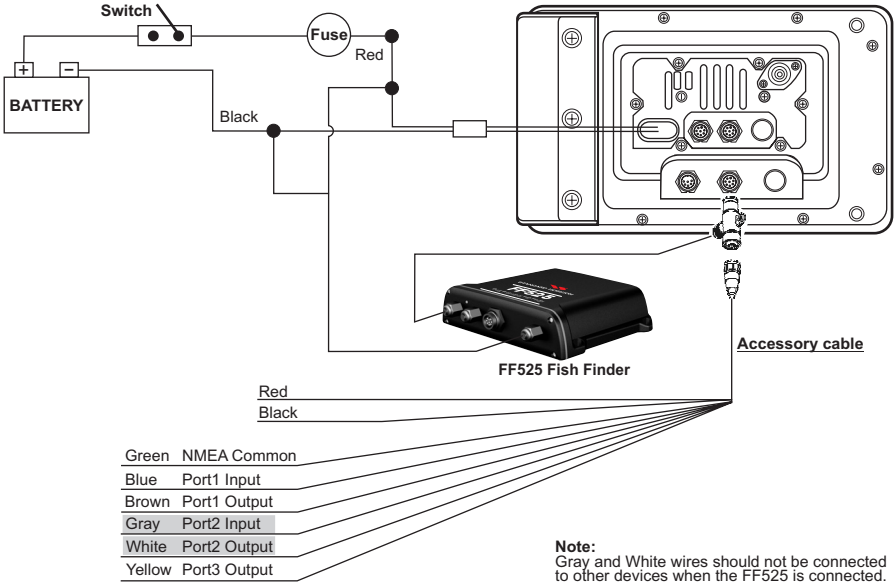
Note:
Gray and White wires should not be connected to other devices when the FF525 is connected.

2.4.1 CP300 and CP300i



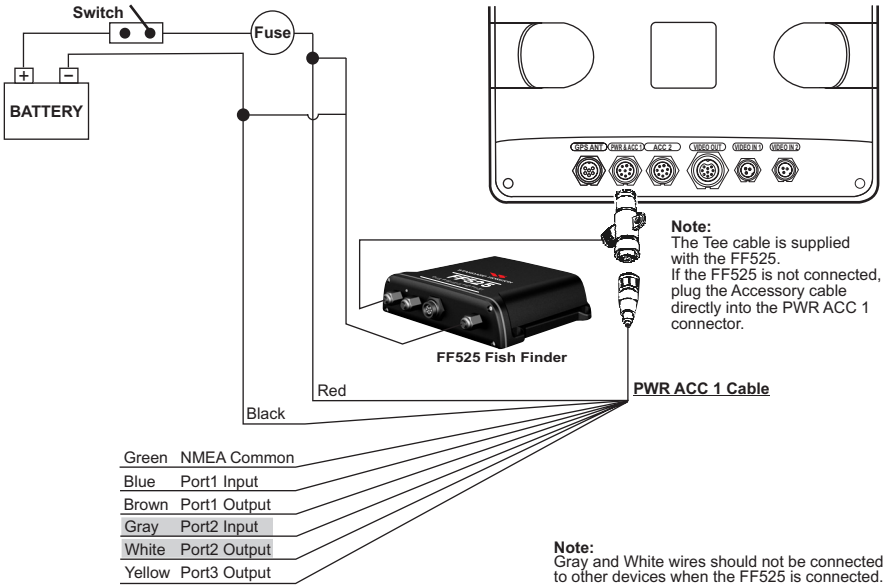
Note:
Gray and White wires should not be connected to other devices when the FF525 is connected.

2.4.2 CPV350



Note:
Gray and White wires should not be connected to other devices when the FF525 is connected.

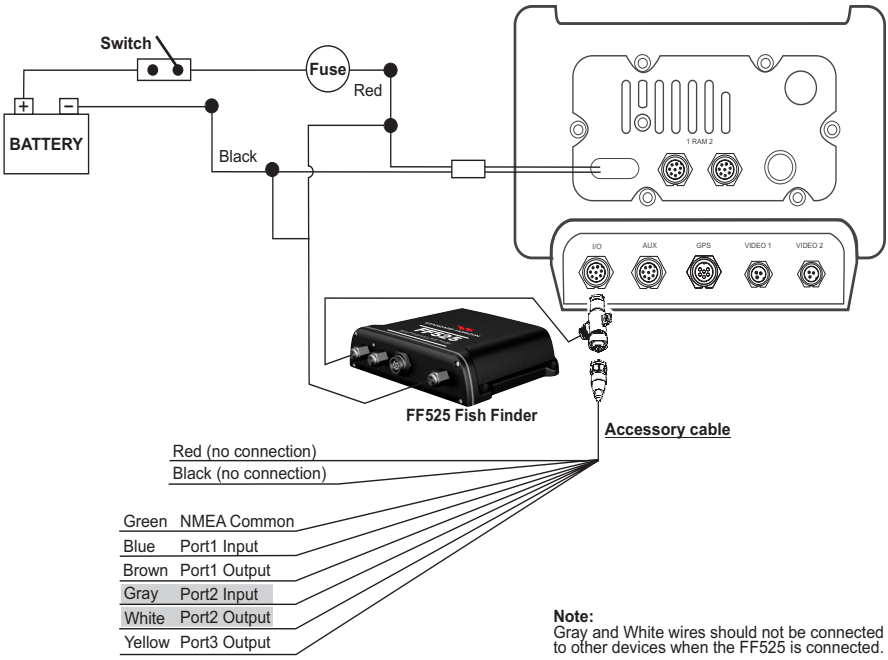
2.4.3 CP500



Note:
The Tee cable is supplied with the FF525.
If the FF525 is not connected, plug the Accessory cable directly into the PWR ACC 1 connector.

Note:
Gray and White wires should not be connected to other devices when the FF525 is connected.

2.4.4 CPV550



2.5 SOFTWARE SETUP

NOTE

On software version v. 16.00.00R port 2 of the GPS Chart Plotter has be set to FF525 by default. If the software in the GPS Chart Plotter is earlier than v. 16.00.00R, follow the steps below.

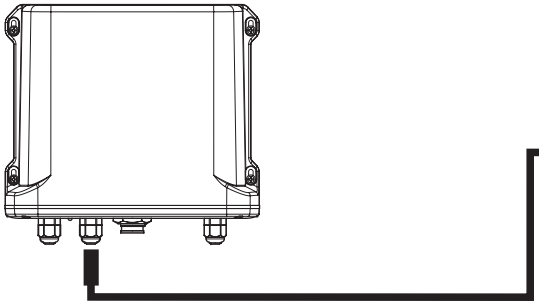
After connections have been made, the GPS Chart Plotter must be setup to communicate with the FF525. Port 2 of the NMEA In/Out Communication Setup menu must be changed to FISH FINDER as shown below for communications.

1. From the Chart page, press **[MENU]**. Move the ShuttlePoint knob to highlight **SETUP MENU** and press **[ENT]**.
2. Move the ShuttlePoint knob to highlight **ADVANCED SETUP** and press **[ENT]** or move the ShuttlePoint knob to the right.
3. Move the ShuttlePoint knob to highlight **IN/OUT CONNECTIONS** and press **[ENT]** or move the ShuttlePoint knob to the right.
4. Move the ShuttlePoint knob to highlight **PORT 2 INPUT** and press **[ENT]** or move the ShuttlePoint knob to the right.
5. Move the ShuttlePoint knob up/down to select **FISH FINDER** and press **[ENT]** or move the ShuttlePoint knob to the right.
6. Press **[CLR]** or move the ShuttlePoint knob to the left until the Chart page is shown.

2.6 OPTIONAL CONNECTIONS

The FF525 is supplied with connections that allow the FF525 to be connected to the following external devices:

a. NMEA device capable of listening to DBT, DPT, VHW, VLW, MTW
b. Temperature sensor (10K ohms at 77°F)
c. 12VDC alarm buzzer (400mA max current draw)



WIRE COLOR	FUNCTION
BLACK	GND
RED	Not connected
WHITE	NMEA Output(+)
GREEN	NMEA GROUND
GRAY	Not connected
YELLOW	Temp 2 INPUT(+)
BROWN	Not connected
BLUE	Alarm OUTPUT(+)
ORANGE	Not connected
PINK	Not connected

Figure 2.6 - The FF525 Optional Connections

2.6.0 NMEA Output

The following sentences are output: DPT and DBT (Depth), VHW (Speed), VLW (Trip Log), MTW (Water Temperature), XDR (External Temperature Sensor).

2.6.1 Alarm Buzzer

This connection has the capability to drive a buzzer that draws 400mA. Any 12VDC buzzer within the current draw requirements can be connected.

2.6.2 Temperature Sensor

Any thermistor type temp sensor that produces 10K ohms at 77°F can be connected.

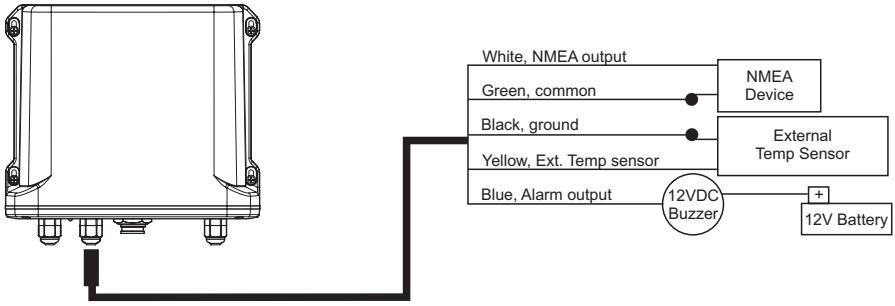


Figure 2.6.2 - Optional Connections

3. TRANSDUCER

WARNING

WHEN PLUGGING IN OR UNPLUGGING A TRANSDUCER TO THE FF525 MAKE SURE POWER IS TURNED OFF.

The transducer is a device that transmits and receives sound waves into the water. The active component inside the transducer is commonly referred to as an element but actually is a piezoelectric ceramic material.

3.0 TRANSDUCER MOUNTING

3.0.0 Power Boats

Basically there are two hull types of powerboats: Planing and Displacement. In the following pictures the boxes with lines are where the transducer should be installed.

Figure 3.0.0 - Planing (on the left) and Displacement (on the right)

The planing hull allows the boat to rise quickly out of the water, allowing the boat to travel at higher speeds.
The displacement hull does not ride up on top of the water; rather it pushes through the water.

3.0.1 Sailboats

Mount the transducer in the first front 1/3 part of the boat, just forward of or the side of the keel.

Figure 3.0.1 - Fin Keel (on the left) and Full Keel (on the right)

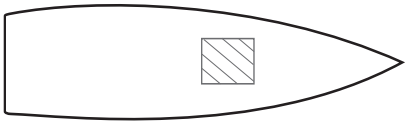


Figure 3.0.1a - Mounting Area

3.0.2 Transducer Types

Since there are many different shapes and sizes of hulls, STANDARD HORIZON offers a range of Depth transducers to fit the vessels requirements.

3.0.3 Low Profile Thru-Hull

If the user is planning to mount a thru-hull transducer first he has to know the dead rise angle where the transducer will be located on the boat. The "Dead Rise" is a nautical term that refers to the angle of the hull where the transducer will be mounted (see picture below).
Specific transducers are designed to be installed on boats with different dead rises.

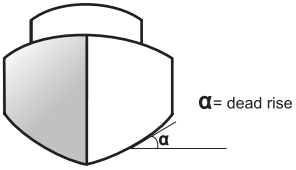


Figure 3.0.3 - Dead rise

3.0.4 Transom (POWER BOATS ONLY)

The back of a boat is called the transom this is where this transducer is mounted. This transducer has a bracket that is screwed down onto the hull.

3.0.5 Fairing Block

Used when a hull is over 10-15 degrees.

- The Fairing Block is used to compensate the dead rise of the hull. The Fairing Block STANDARD HORIZON offers is made from hard plastic which fits around the transducer.
- To install the transducer and Fairing Block, the user measures the dead rise of the hull and cuts the Fairing Block to that angle. One half of the Fairing Block mounts on the inside while the other part of the Fairing Block mounts on the outside of the hull.

3.0.6 In-hull

This transducer is epoxyed to the inside of the hull that is not more than 1/2 inch thick and is solid not cored.

3.0.7 Optional Transducer ID Sensors

DST520 2" Nylon Thru-hull Depth & Temp	**DST521** Transom Mount, Depth, Speed & Temp	**DST523** 2" Bronze Thru-hull Depth & Temp	**DST525** In-Hull Mount, Depth	**DST526** Bronze Thru-hull, Triducer, Depth, Speed & Temp, with fairing block	**DST527** In-Hull Mount, Depth	**DST528** Thru-hull, Long stem, Depth & Temp, with fairing block
600W Transducers					**1000W Transducers**	

Figure 3.0.7 - Optional Transducers

3.0.8 Fish Finder Basics

The FF525 consists of a high power transmitter, sensitive receiver and a transducer. The FF525 sends an electrical pulse to the transducer, which contains an element that converts the pulse into acoustic (sound) waves, which is sent through the water. As this wave travels from the transducer to the bottom, it may strike fish, structures, thermalclines (temperature changes in the water). When the wave strikes an object(s) a certain amount of the wave is reflected back to the transducer depending on the composition and shape of the object. When the reflected wave is returned to the transducer it is converted into a voltage and is amplified by the receiver, processed and sent to the display. The speed of sound in water is roughly 4800 Ft/sec, so the time lapse between the transmitted signal and the received echo can be measured and the distance to the object determined.

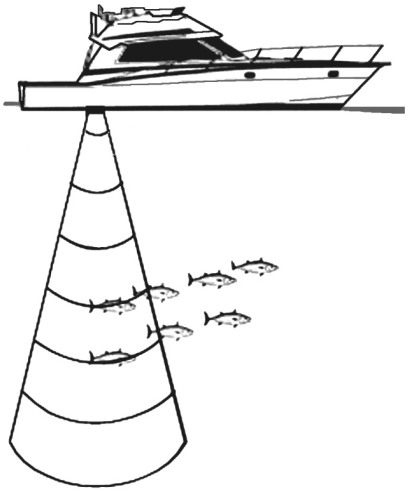


Figure 3.0.8 - Fish Finder working principle

4. OPERATION

4.0 UNDERSTANDING THE FISH FINDER PAGE

The display on STANDARD HORIZON GPS Chart Plotters shows a history of time of the echoes received by the transducer. The STANDARD HORIZON GPS Chart Plotters have a menu that allows adjustments to receiver sensitivity, depth range and scrolling speed of the Fish Finder display.

1. Warning message
2. Fish Finder window
3. Color Bar
4. Digital Depth
5. Water temperature
6. Shallow Alarm Bar
7. Range Bar
8. Variable Depth Marker (VDM)
9. A-Scope
10. Deep Alarm Bar
11. Transmit Frequency

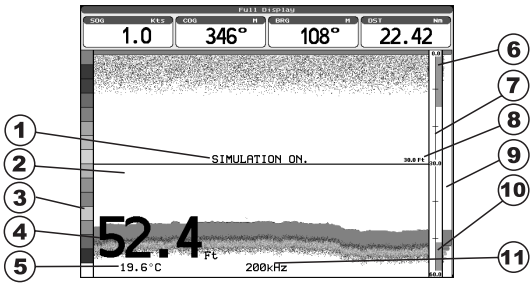


Figure 4.0 - The Fish Finder page

The following is a brief description of terms listed in the previous Figure:

1. **Warning Message**
   Flashing label that is turned On when the echo sounder is in Simulation mode. The following is the list of the warning messages (see also Par. 5.8):
   - SHALLOW WATER
   - DEEP WATER
   - HIGH WATER TEMP
   - LOW WATER TEMP
   - WATER TEMP RATE
   - FISH SPOT
   - NO DATA

2. **Fish Finder window**
   Graphic presentation of sonar soundings recorded as a continuous profile scrolling across the screen from right to left. Such recordings represent the image of the water beneath your boat, items appear as they pass under your transducer; the items on the right side of the screen are closer to you than those on the left. The correct interpretation of the Fish Finder page allows retrieving useful information about what is under the boat.

3. **Color Bar**
   Colored scale located on the left side of the screen that shows the colors used in the Fish Finder page to represent the echoes strength. The color on the top of the bar

represents the maximum echo strength, while the color on the bottom of the bar represents the minimum echo strength.

④ **Digital Depth**
Readout of the current bottom depth.

⑤ **Water Temperature**
Readout of the current water temperature returned by the temperature sensor (TEMP 1) included in DST520, DST521, DST523, DST526 and DST528.

⑥ **Shallow Alarm Bar**
Located on the right side of the Range Bar, the Shallow Alarm Bar shows the range outside of which the depth measurement will trigger a Shallow Alarm.

⑦ **Range Bar**
Vertical graduated bar that is located along the right side of the screen. It is a scale which reflects the depth of the area being displayed.

⑧ **Variable Depth Marker (VDM)**
Horizontal line on to the Fish Finder page window with a depth label. Move the ShuttlePoint knob Up or Down to change the position of the VDM. The label displays the depth of the cursor position. The VDM can be moved to any location pinpointing the depth of a target.

⑨ **A-Scope**
Real time representation of fish and bottom features passing through the beam of the transducer, drawn as column of horizontal lines whose length and hue is proportional to the echo strength returned. The color of the echo strength depends on the selected display color. When the default palette is selected, the strongest sonar returns will be shown as red and weaker returns will be shown blue.

⑩ **Deep Alarm Bar**
Bar located on the left side of the Range Bar, showing the portion of the Echogram currently represented in the zoomed window (on the left part of the screen). It is turned On selecting the Echosounder Split page.

⑪ **Transmit Frequency**
Shows the selected depth transmit frequency. As a reference, 200kHz selection is normally used to see targets in depth up to 400Ft, and 50kHz is used in water over 400Ft.

4.1 UNDERSTANDING THE FISH FINDER DISPLAY

① Fishes
② Thermoclines
③ White Line
④ Surface Clutter
⑤ Structures
⑥ Bottom Echo Profile

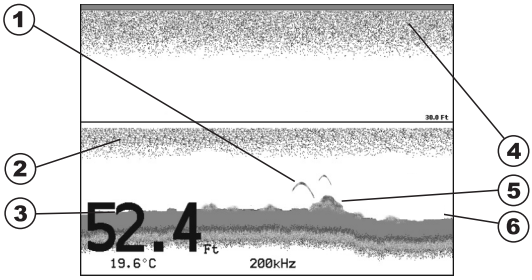


Figure 4.1 - The Fish Finder display

① **Fishes**
Fishes are represented as arcs because of the cone angle of the transducer. In fact as the boat passes over the fish the leading edge of the cone strikes the fish, causing a display pixel to be turned on. As the boat passes over the fish, the distance to the fish decreases turning each pixel on at a shallower depth on the display. When the boat is directly over the fish, the first half of the arch is formed and since the fish is closer to the boat, the signal is stronger and the arch is thicker. As the boat moves away from the fish, the distance increases and the pixels appear at progressively deeper depths forming the remaining half of the arch.

② **Thermoclines**
Are the zones where two layers of different water temperatures meet. The greater the temperature differential, the denser the thermocline shows on the screen. Thermoclines are represented as horizontal stripes of noise. They are very important for fishing since often many species of game fish like to suspend in, just above, or just below the thermoclines.

③ **White Line**
The White Line shows the difference between hard, soft bottoms and even distinguishes between fishes and structures located near the bottom. In this way it is easier to tell the difference between a hard and soft bottom and even to distinguish fishes and structures located nearby the bottom. For example, a soft, muddy or weedy bottom returns a weaker echo that is shown with a narrow white line while a hard bottom returns a strong echo that causes a wide white bottom line.

④ **Surface Clutter**
Appears like noise at the top of the screen extending many feet below the surface. It's caused by many things, including air bubbles, bait fish, plankton and algae.

⑤ **Structures**
Generally, the term "structure" is used to identify objects like wrecks and weeds rising from the bottom.

⑥ **Bottom Echo Profile**
Bottom profile recorded by the FF525. When the echo sounder is set in Auto Range mode, the bottom is kept in the lower half in the display.

4.2 DISPLAYING THE FISH FINDER PAGE

This section explains how to show and customize the selection of the Fish Finder display pages.

1. From all pages (except the Fish Finder page), press **[MENU]**.
   From Fish Finder page, press **[MENU]** two times.

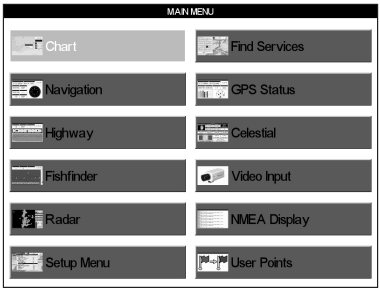


Figure 4.2 - Main Menu

2. Move the ShuttlePoint knob to highlight **FISH FINDER** and press **[ENT].**

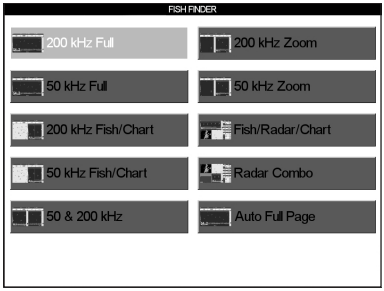


Figure 4.2.1 - Fish Finder page selection menu

3. Move the ShuttlePoint knob to select the desired display and press **[ENT]**. The Page options are shown in the following paragraphs.

4.2.0 Auto Full Page

When this page is selected, the FF525 automatically changes the transmit frequency to show depths. Automatic switching occurs when depth of water is less than 400Ft (200kHz) and greater than 400Ft (50kHz).

4.2.1 200 kHz Full, 50 kHz Full and 50&200kHz Display Pages

Allows the user to setup the Chart Plotters display to show 200kHz, 50kHz or 200/50 kHz split screen Fish Finder.

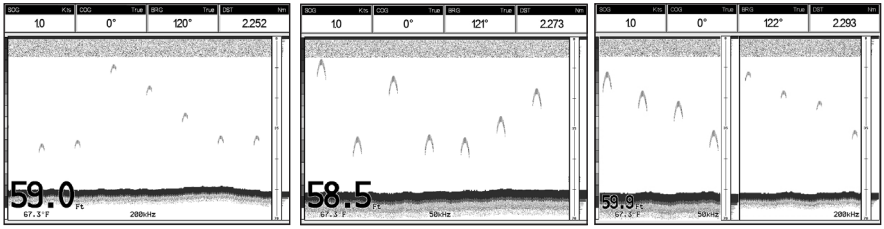


Figure 4.2.1 - Full Display pages

4.2.2 200 kHz and 50 kHz Zoom Pages

Allows the user to zoom into the 200kHz or 50kHz Fish Finder display to show detail of the area selected by the VRM (Variable Range Marker). Referring to Figure 4.2.2, the left display shows the zoomed display and the right display shown the unzoomed display.
To select the area to be zoomed in move the ShuttlePoint knob Up or Down which moves the VRM line.
To zoom In or Out, press **[ZOOM IN]** or **[ZOOM OUT]** or, on the CPV350 and CPV550 press **[ZOOM]** and rotate the channel knob.
The zoom ranges are 2x and 4x the normal Fish Finder display.

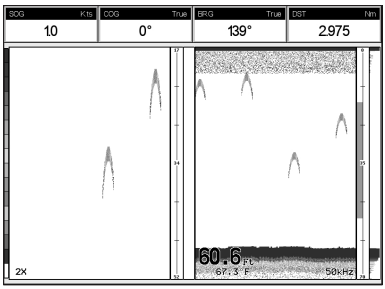


Figure 4.2.2 - Zoom Full Page

4.2.3 200 kHz and 50 kHz Fish/Chart Pages

Selects the Chart Plotters display to show the Chart page on the left half of the screen and the Fish Finder on the right half of the screen. 200kHz or 50 kHz Fish Finder can be selected on the right half of the display.

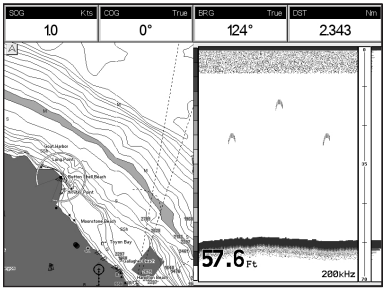


Figure 4.2.3 - Fish/Chart Page

4.2.3.0 Focus Soft Key on FISH/CHART Page (EXCEPT CP180/CP180I)
When the Fish/Chart Page has been selected and one of the Soft Keys is pressed, a **[Focus]** Soft Key will be shown.

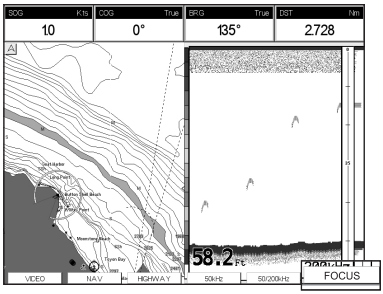


Figure 4.2.3.0 - Example of Chart/Fish page with **[Focus]** shown

When **[Focus]** is pressed the Chart Plotter places the focus on the Chart page or on the Fish Finder window. With the focus on the Chart page the cursor may be moved and all chart menus can be selected. When focus is on the Fish Finder window the Variable Range Marker can be moved to see the depths of targets and Fish Finder menus can be accessed.

4.2.4 Radar Pages (EXCEPT CP180/CP180I)

4.2.4.0 FISH/RADAR/CHART Page

Selects the Chart Plotters display to show the Chart, the Fish Finder and the Radar Page on the screen.

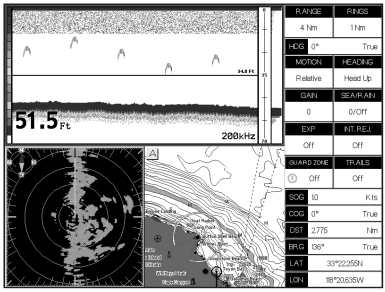


Figure 4.2.4.0 - Fish/Radar/Chart Page

4.2.4.1 RADAR COMBO Page

Selects the Chart Plotters display to show the Chart, the Fish Finder, the Radar and the Higway Page on the screen.

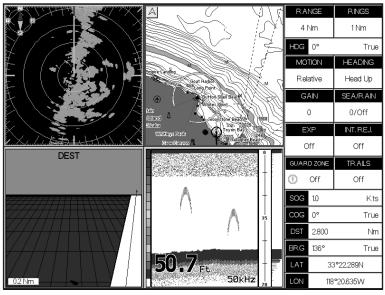


Figure 4.2.4.1 - Radar Combo Page

4.2.4.2 Focus **Soft Key**

When the Fish/Radar/Chart Page or the Combo Page has been selected, the active window is highlighted a "red" boarder around the window. The keyboard commands are related to that focused view.

To move the focus to a different window follow the procedure:

1. Press any Soft Key. The Soft Key labels appear on the bottom of the screen.
2. Press **[Focus].** A popup window appears where the active focus window label is highlighted.
3. Move the ShuttlePoint knob to highlight the desired window and press **[ENT]**. The red boarder is moved to the focused window.

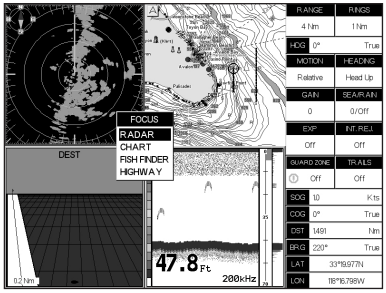


Figure 4.2.4.2 - Example of Combo Page with **[Focus]** shown

4.3 SOFT KEY OPERATION (EXCEPT CP180/CP180I)

1. Press any of the Soft Keys to show the key descriptions, then press the [200kHz] Soft Key if it has been customized (for detail see the next paragraph).

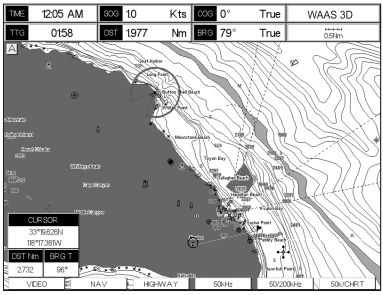


Figure 4.3 - Example of Fish Finder page selection by Soft Keys

4.3.1 Customizing the Soft Keys

To customize a Soft Key, from Chart page:

1. Press any of the Soft Keys.
2. Press and hold the Soft Key you want to customize. The following menu appears:

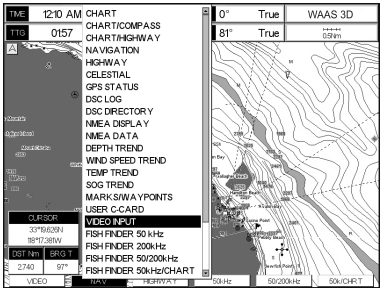


Figure 4.3.1 - Customizing Soft Keys

3. Move the ShuttlePoint knob to the desired Fish Finder page and press **[ENT]**.

5. FISH FINDER SETUP MENU

This section explains how to show the Fish Finder Setup menu and describe the Fish Finder Setup menu sub-options.

1. From the Full Fish Finder page, press **[MENU]**. The following menu appears:

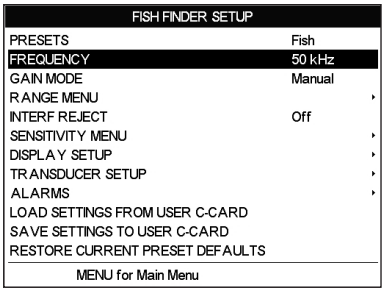


Figure 5 - Fish Finder Setup menu

5.0 PRESETS

To simply menu selections, the FF525 has two presets that can be easily selected for Fishing or Cruising:

	FISH	CRUISE
Gain	Auto	Auto
Range mode	Auto	Auto
Gain offset	0%	10%
Shift	0	0
STC	Short	Short
Noise level	2	4
Scrolling Speed	10	10
Fish Symbols	Echo	Echo
A-Scope	On	On
Surface Declutter	4	4

Figure 5.0 - Presets table

NOTE

For Gain and Gain Offset settings refer to Sensitivity menu (see Par. 5.5).
For Range and Shift settings refer to Range menu (see Par. 5.3).

5.1 FREQUENCY

Allows you to choose the frequency among Auto, 50 kHz, 200 kHz or 50&200 kHz when single frequency page is selected.

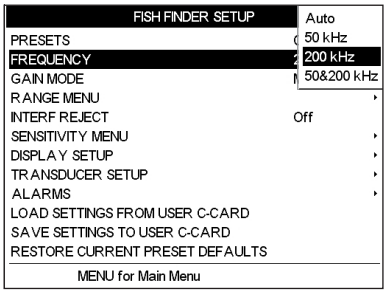


Figure 5.1 - Frequency menu

5.2 GAIN MODE

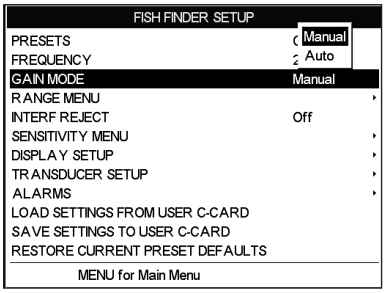


Figure 5.2 - Gain Mode menu

5.2.0 Auto Mode

Allows the FF525 to automatically adjust receiver Gain depending on water depth.

5.2.1 Manual Mode

Allows the user to change the Gain manually to fine tune the FF525's receiver.

5.3 RANGE MENU

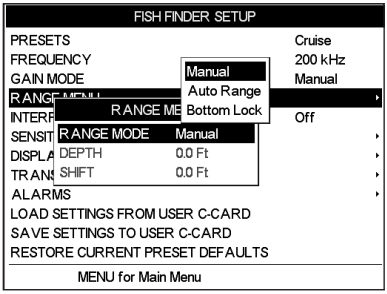


Figure 5.3 - Range menu

5.3.0 Range Mode

Selects among Manual, Auto Range and Bottom Lock.

5.3.0.0 Manual Mode
Used to set the depth Range (from the surface) the Fish Finder display will show.

5.3.0.1 Auto Range
The Fish Finder determines automatically the Range as to keep the bottom visible in the lower bottom of the screen. In this mode, Shift is always set to 0.

5.3.0.2 Bottom Lock
The Bottom Lock function keeps the screen display locked onto a certain Range around the bottom. Let's say the bottom is 400Ft and the Bottom Lock Range is set to display 30Ft around the bottom, the screen (instead of displaying from 0Ft to e.g. 450Ft) will display only a Range of 30Ft around the bottom, e.g. from 380Ft to 410Ft.

5.3.1 Depth

Moves the display from showing the bottom to the depth value entered.

5.3.2 Shift

Shifts the display from the bottom of the transducer to the depth value entered.

Example: Your vessel is in about 57Ft of water, however there is fish suspended in 35Ft of water. You want to display to 10Ft area around the fish. Shift would be set to 25Ft and Depth would be set to 35Ft shown in example below.

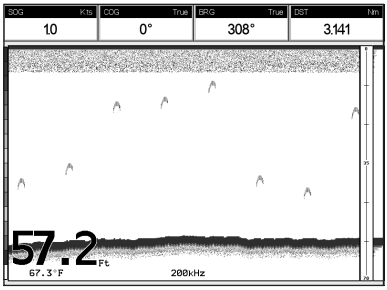


Figure 5.3.2 - Example of Depth and Shift

5.4 INTERFERENCE REJECTION

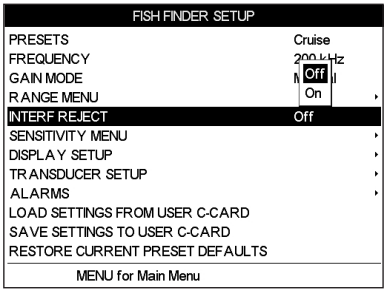


Figure 5.4 - Interference Rejection menu

Turns On or Off a filter to remove noise from other Fish Finder or Depth Sounders.

5.5 SENSITIVITY MENU

All settings in the Sensitivity menu are related to the selected Fish Finder transmit frequency (50 or 200kHz).

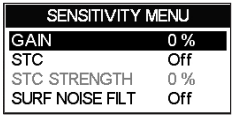


Figure 5.5 - Sensitivity menu

5.5.0 Gain

Allows you to control the Sensitivity of the unit's receiver from 0 to 99%. To see more detail, increase the receiver Sensitivity by selecting a higher Gain percentage. If there is too much detail or if the screen is cluttered, lowering the Sensitivity may increase the clarity of the display.

NOTE

When the Gain Mode option is set to Auto, the receivers Gain cannot be changed.

When the Gain Mode option is set to Manual, the Gain can be manually adjusted. When switching from Automatic to Manual Mode, the Gain + Offset value is copied into the Manual Gain setting of the receiver.

5.5.1 **STC** (Sensitivity Time Control)

The purpose of this selection is to filter surface noise in the water.
The STC functions reduces or eliminates Surface Clutter signals by changing the Sensitivity of the receiver, decreasing it near the surface and gradually increasing it as the depth increases. Its default value is SHORT for the 200kHz frequency and MID for the 50KHz frequency. Such values are good in most conditions. However when navigating in very shallow waters it may be necessary to switch it to OFF, while in very deep waters with a lot of Surface Clutter it may be better to increase it to MID or LONG.

NOTE

In some situations it may be necessary to adjust the STC so the sounder can read through the surface noise and show the bottom. One indication that the STC needs to be changed is when the display intermittently changes the depth from the correct depth to a very shallow depth.

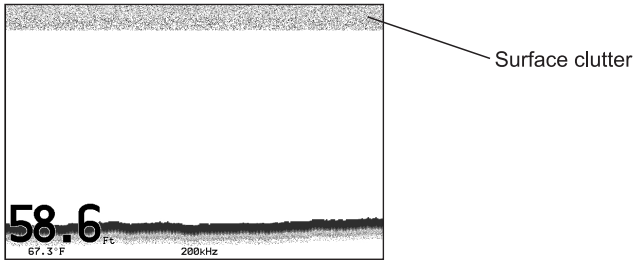


Figure 5.5.1 - STC - Surface Clutter

The STC can be changed from Short, Mid, Long and Custom.

5.5.1.0 STC Length

This is the depth range which the STC operates. In custom mode it can be varied from 0Ft to 1000Ft (60Ft or 255Ft on previous software versions). In preset mode it's value is reported in the following table (See Par. 5.5.1.2).

5.5.1.1 STC Strength

It is the starting attenuation value of the STC. It acts by attenuating the Gain of the given percentage value. In custom mode it can be varied from 0% to 100%. The STC effect is maximum near the surface, to eliminate the Surface Clutter and it progressively diminishes to 0 at the selected STC depth.

5.5.1.2 Preset values table

	OFF	Short	Mid	Long
STC Depth (Ft)	1	60	60	255
STC Length	0	10%	30%	57%

Figure 5.5.1.2 - STC Preset values table

If in VERY SHALLOW WATER the Fish Finder display is showing a bottom or digital readout deeper than the actual depth this situation may occur if STC is set to LONG or MID when the bottom is shallow. This issue may be resolved by adjusting the STC value to SHORT or even to OFF in very shallow waters.
If in DEEP WATER the Fish Finder display is showing a very shallow bottom or digital readout this may happen because in conditions of strong Surface Clutter the Fish Finder may erroneously look on to the Surface Clutter. To solve this situation try to increase the STC to LONG or to CUSTOM increasing the STC length and strength.
If in DEEP WATER the Fish Finder doesn't see the bottom, this may happen because the bottom is out of range or is very near to the maximum depth that can be tracked by the Fish Finder. In the latter case this may happen if the bottom composition is soft as mud, if the sea conditions are bad, there are thermoclines or the water is full of suspended materials (silt, plankton). All these factors may affect considerably the performance of the

Fish Finder to be able to see the bottom. In these cases change the RANGE MODE from AUTO to MANUAL Range and manually adjust the depth range until the bottom echo becomes visible on the Fish Finder display.

5.5.2 Surface Noise Filter

An automatic filter that attempts to dynamically remove Surface Clutter that causes the screen to be filled up with strong return echoes just below the surface. It may seem that the same functionality could be archived using on the STC control however there is main difference between such control in fact the STC control impacts the capability to detect and track the bottom and is not designed to cancel completely the surface noise, on the other side the Surface Noise Filter attempts to cancel completely the surface noise but it doesn't affect the capability to detect and track the bottom.
The Surface Noise Filter has 9 settings: OFF, 1, ..., 8. When it is set to OFF the Surface Noise it is not cancelled. When it is set to 1 the Surface Noise is cancelled up to a depth of 5Ft, increasing the Surface Noise increases the depth in which the Surface Noise is cancelled up to a depth of 255Ft when the preset is set to 8, as shown in the Surface Noise Filter Table:

Surface Noise Filter Depth								
Preset	1	2	3	4	5	6	7	8
Depth (Ft)	5	10	15	20	30	60	130	255

Figure 5.5.2 - Surface Noise Filter Depth table

5.6 DISPLAY SETUP

Allows the Fish Finder's display page appearance to be changed.

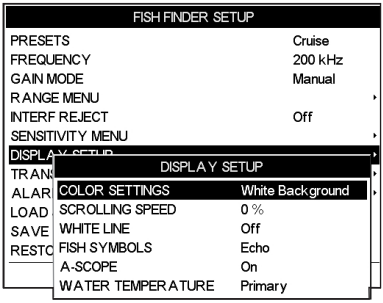


Figure 5.6 - Display Setup menu

5.6.0 Color Settings

Allows you to change the color of the Fish Finder display from Blue (default), White, Black, Gray scale.

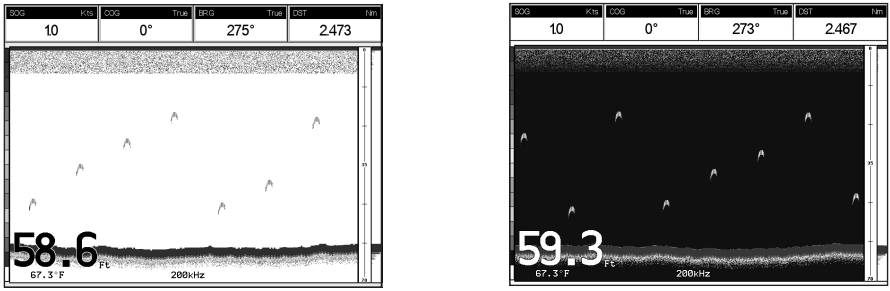


Figure 5.6.0 - White and Blue background examples

5.6.1 Scrolling Speed

Controls the rate the Fish Finder scrolls and updates the Fish Finder display.

5.6.2 White Line

Controls how the bottom type (hard or soft) is shown on the display. When the White Line is Off the bottom return will display as red. When the White Line is On it can be used to determine bottom hardness.

5.6.3 Fish Symbols

Controls the graphical representation of underwater-suspended targets.

Echo	: shown as arches (echoes)
Icon + Echo	: shown as arches with the Fish icon
Icon + Echo + Depth	: shown as arches with the Fish icon and relative depth values
Echo + Depth	: shown depth values
Icon	: shown as Fish icons without the arches
Icon + Depth	: shown as Fish icons and their relative depth values (shown accordingly to currently selected depth unit)

5.6.4 A-Scope

Shows the real time display of the echo from the bottom.

5.6.5 Water Temperature

Allows selection between:

a. the temperature sensor in the depth transducer

or

b. an external temp sensor connected to the Optional Connection wires. Refer to Par. 2.6.2.

5.7 TRANSDUCER SETUP

This menu allows you to calibrate the speed through the water, water temperature and the keel/prop offset of the transducer.

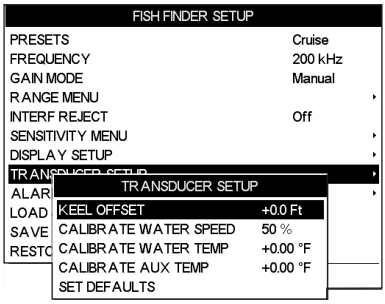


Figure 5.7 - Transducer Setup menu

5.7.0 Keel Offset

The keel offset can be set to cause the Fish Finder to display an offset depth below the keel or the actual water depth from the surface. To setup to show the depth below the keel, enter a negative depth value or a positive depth to show offset from the transducers face to the water surface.

5.7.1 Calibrate Water Speed

Used to calibrate the Water Speed readings from the transducer. Adjustment can be made from -10% to +10%.

5.7.2 Calibrate Water Temp

Used to calibration on the Water Temperature sensor in the transducer.

5.7.3 Calibrate Aux Temp

Allows the calibration of the Aux Temperature sensor connected to the Optional Connection wires.

5.7.4 Set Defaults

Restores the factory settings.

5.8 ALARMS

The Alarms menu allows you to define alarm settings for Shallow Alarm, Depth Alarm and Temperature Upper/Lower/Rate.

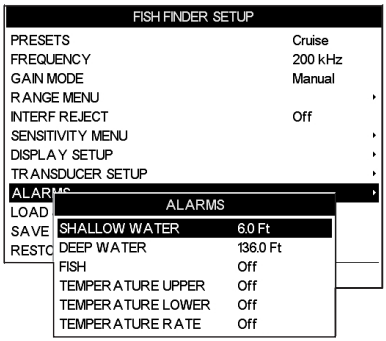


Figure 5.8 - Alarms menu

To set an Anchor Alarm, enter in a shallow water and deep water value above and below your actual anchoring depth. The alarm will sound when the depth becomes shallower or deeper than the settings.

5.8.0 Shallow Water

Triggers an alarm when depth becomes shallower than the set depth.

5.8.1 Deep Water

Triggers an alarm when depth becomes deeper than the set depth.

5.8.2 Fish

The Fish Alarm can be set to detect and alert you depending on the size of fish. The options are: Off, Small, Medium, Big and Huge. The alarm sounds if the set size (or bigger) is detected.

5.8.3 Temperature Upper

Triggers an alarm when the transducer reports a temperature above the set temperature.

5.8.4 Temperature Lower

Triggers an alarm when the transducer reports a temperature below the set temperature.

5.8.5 Temperature Rate

Triggers an alarm when the transducer reports a temperature variation rate above the set temperature.

5.9 SAVE SETTINGS TO USER C-CARD

This option saves the complete set of Fish Finder settings to an optional User C-CARD available from C-Map. This is useful to avoid the user having to retune up Fish Finder after a RAM Clear operation or a software update.

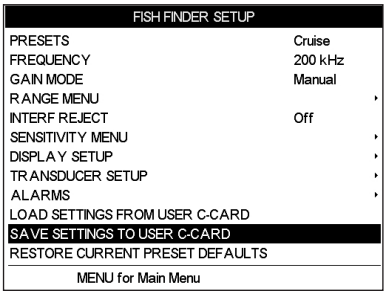


Figure 5.9 - C-Card - Save settings

5.10 LOAD SETTINGS FROM USER C-CARD

This option loads the complete set of Fish Finder settings from the User C-CARD (Memory Card that may be used to backup the User Points and Tracks too).

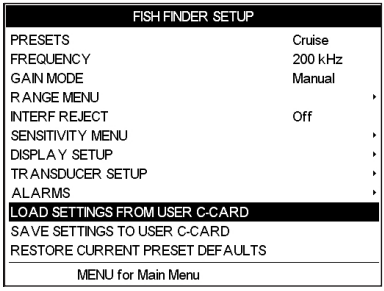


Figure 5.10 - C-Card - Load settings

5.11 RESTORE CURRENT PRESET DEFAULTS

This option restores the default values only for the current presets (see Par. 5.0, Preset) and does not affect the other presets.

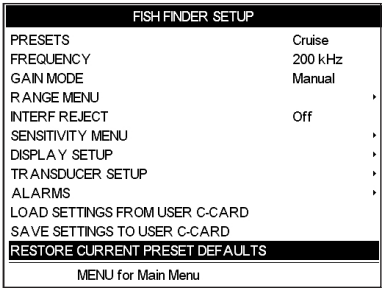


Figure 5.11 - C-Card - Restore settings

6. FF525 SPECIFICATIONS

Power supply	:	10 - 35 Volt dc
Max stand by current draw	:	1KW:142mA at 12 Volt dc
	:	600W:100mA at 12 Volt dc
Max current draw	:	1KW:1.42A at 12 Volt dc
	:	600W:1A at 12 Volt dc
Power Output	:	600/1000W (4800/8000W Peak to Peak)
Display Colors	:	16 colors
Display Vertical Resolution	:	400 pixels ON CPV350/CP300/CP300I/CPV550/CP500
	:	200 pixels ON CP180/CP180I
Frequency	:	Dual 50 and 200kHz
Max Depth*	:	1KW:1200Ft (365m) at 200kHz; 4000Ft (1219m) at 50kHz
	:	600W:700Ft (213m) at 200kHz; 1500Ft (457m) at 50kHz
Min Depth	:	2.5Ft (0.8m) at 200kHz; 5Ft (1.6m) at 50kHz
Max Typical*	:	1KW:980Ft (299m) at 200kHz; 2700Ft (823m) at 50kHz
	:	600W:600 Ft (183m) at 200kHz; 1350Ft (411m) at 50kHz

NOTE*

This is not a guaranteed specification. The actual maximum depth capability of the system depends on the type of transducer fitted, the reflectivity of the bottom, water condition, etc.

NMEA output sentences	:	Depth: DBT, DPT Temperature: MTW Speed (with DST526): VHW
Weight	:	2.20 LBS (1 kg)
Operating temperature range	:	32°F to 122°F (0°C to +50°C)
Storage temperature range	:	-4°F to 158°F (-20°C to +70°C)

Dimensions - mm (inch) :

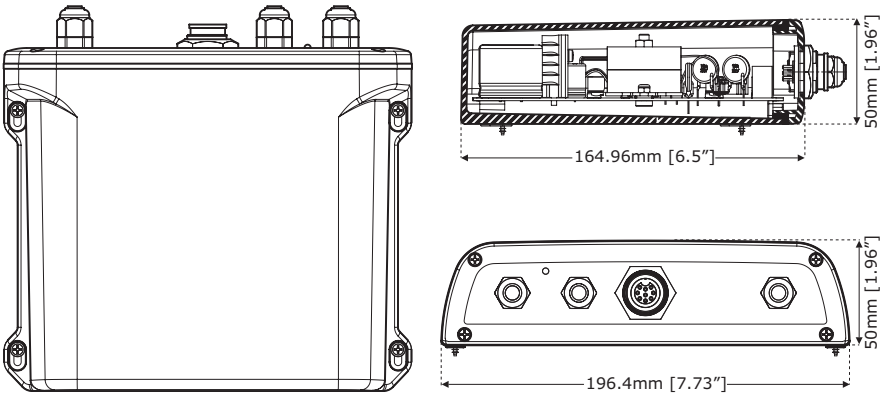


Figure 6 - FF525 Dimensions [mm/inch]

7. TIPS OF OPERATIONS

7.0 How can I disconnect the cables from the FF525 in case I need to do so for the installation?

- Open the FF525 box by unscrewing the four screws (see Figure on Par. 2.4).
- Once the screws are removed, pull out the panel and the Printed Circuit Board (PCB). Unscrew the cables from the PCB.
- Wire the cables as needed.
- Reconnect the cables to the PCB (see Figure 5.1 for reference).
- Push the panel towards the case (be sure to have well positioned the rubber gasket). Close the FF525 box by screwing the four screws.

7.1 How can I set optimal operating parameters?

Optimal operating parameters can be set accordingly with the intended use of the Fish Finder, to quickly get optimal operational parameters for fishing it is may be best to select the FISH preset from the Fish Finder Setup menu, while for cruising it is may be best to select the CRUISE preset.

7.2 What are preset modes?

Preset modes are pre-defined settings of the Fish Finder operating parameters. You can use them to quickly set the Fish Finder in the most commonly used operating modes. These are:

- CRUISE: sets Fish Finder in full auto mode with the sensitivity settings (GAIN OFFSET, NOISE level and STC) optimized for displaying the bottom while underway.
- FISH : sets the Fish Finder in full auto mode with the sensitivity setting optimized for fish finding.

7.3 How can I restore the Fish Finder default operating parameters?

While the Fish Finder page is shown, press **[MENU]** and move the ShuttlePoint knob to Transducer Setup and press **[ENT]**. Move the ShuttlePoint knob to Set Defaults and press **[ENT]**. Press [CONFIRM] on the CP300/CP300i, CPV350, CP500 and CPV550, or on the CP180/CP180i press **[ENT]**. Note that this operation set all default settings, not only the working defaults.

7.4 Can I always leave the Fish Finder in Full Auto/(Auto Gain and Auto Range) mode?

Yes, but note that the full auto mode suits the 90% of the cases, however in extreme situations the auto modes mail fail and thus it is necessary to switch to the Manual mode.

7.5 What are extreme situations in which auto modes may fail?

When the bottom is very deep, at high boat speed, when the bottom is very shallow (< 5Ft), when the water is full of materials in suspension, with bad sea conditions.

7.6 What should I do if the auto modes fail?

Failure of auto modes can happen for various reasons. Hereafter you can find a range of possibilities.

7.7 Auto-Range fails in very shallow waters displaying a digital depth readout deeper than the actual value. What should I do?

This usually happens if the STC is set to LONG or MID and the bottom is shallow or SHORT if the bottom is very shallow causing the Auto Range to hook to the second or third echo from the bottom (since in shallow waters the sound bounces more times back and forth the surface to the bottom). Try decreasing the STC value to SHORT in shallow waters or to switch it to VERY SHORT or OFF.

7.8 Auto Range fails, and the digital depth readout displays a very shallow reading. What should I do?

This usually happens if the STC is off or is set to a low value causing disturbance from Surface Clutter to be stronger than bottom echoes. Try increasing the STC value. As general rule STC has to be set as in shallow waters and LONG in depth waters.

7.9 Auto Range fails in very deep waters displaying a digital very shallow depth readout. What should I do?

The Fish Finder capability to detect the bottom decreases as the bottom depth increase. If the bottom composition is soft as mud, if the sea conditions are bad, if there are thermoclines or the water is full of materials in suspension it can further decrease thus causing the digital depth readout to fail. When this happens the Auto Range algorithm also fails. To recover from this situation it is necessary to switch to Manual Range mode and to set the Manual Depth mode. When Manual Depth mode is selected the algorithm that calculates the digital depth readout searches for the bottom within the range manually selected by the user. At this point it is necessary to increase manually the Range until the bottom becomes graphically visible. If the echoes from the bottom are strong enough, the Fish Finder shall look to the bottom giving a correct depth reading and shall be possible to return in Auto Range mode. Please note that if one or more of the conditions that reduce the echoes from the bottom listed above is true the bottom may be not visible at all, in this situation a strong thermocline or Surface Clutter may be interpreted by the Fish Finder as the bottom.

7.10 At a very shallow range upper half of the screen appears almost completely filled by the Surface Clutter. How can I eliminate it?

This is normal in shallow waters. To clean up the Surface Clutter without degrading the digital depth readout algorithm functionality there are two modes: 1) If Surface Declutter = OFF it is possible to set the STC value to custom setting the STC length to the same size of the Surface Clutter, and increasing the STC strength until the image on the screen cleans up. Please note that in very shallow waters it is usually better to switch to Manual Gain mode to reduce Gain fluctuation due to rapidly changing bottom conditions. 2) Using Surface Declutter, increase the Surface Declutter value until the Surface Declutter disappears completely.

7.11 Why do I never see fishes in the range between 0 to 2Ft?

The minimum range of the Fish Finder is 2Ft. In this interval the Fish Finder can detect neither the bottom nor any target.

7.12 How can I reduce the Surface Clutter?

You can act by: properly setting the STC as described at 7.10 and also by increasing the NOISE LEVEL and reducing the GAIN or the GAIN OFFSET (if you are in Auto Gain mode). However please note that a strong attenuation of Surface Clutter may also reduce the capability to detect targets.

7.13 The Fish Finder is in Auto Gain mode but the picture display too many small targets, what shall I do to reduce the screen clutter?

Try increasing the NOISE LEVEL or decreasing the GAIN OFFSET.

7.14 In very shallow waters when the Auto Gain mode is selected there are fluctuations in the bottom profile width and its color representation. What should I do?

In very shallow waters the environment situation (bottom/water condition) change very quickly thus causing the auto gain algorithm to create oscillations while trying to set optimal GAIN value for each situation. To avoid this it is advisable to switch to MANUAL GAIN mode and fine tune the GAIN to a fixed setting.

7.15 In very deep waters even setting the GAIN to its maximum value I cannot see the bottom what shall I do?

Try decreasing the NOISE LEVEL. If still the bottom is not visible there is nothing you can do, the bottom echo is simply too weak to be detected.

7.16 GPS Chart Plotter shows no data when viewing the Fish Finder page

This may be due to the FF525 having an issue. To confirm, listen to the depth transducer for the transmit pulse. If the pulse is not heard the FF525 is defective.

7.17 LED Status Indicator

The FF525 has a small LED that blinks. There are seven different LED behaviours, representing seven different diagnostic conditions described below.

- OFF : DC power is not being supplied to the FF525.
- ON CONTINUOUSLY : The transducer is not connected to the GPS Chart Plotter or problem with cable of the transducer cable.
- 1 LONG FLASH EVERY 2 SECONDS : The FF525 is not connected with the GPS Chart Plotter.
- 1 SHORT FLASH EVERY 2 SECONDS : The FF525 is connected to the GPS Chart Plotter and is operating correctly.
- 2 SHORT FLASHES EVERY 2 SECONDS : The FF525 is connected to the GPS Chart Plotter and is operating correctly.
- 3 SHORT FLASHES EVERY 2 SECONDS : A non-Standard Horizon transducer (without transducer ID) has been connected
- 4 SHORT FLASHES EVERY 2 SECONDS : No transducer connected.

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PLEASE NOTE

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STANDARD HORIZON LIMITED WARRANTY

STANDARD HORIZON (a division of Vertex Standard USA) warrants, to the original purchaser only, each new Marine Product ("Product") manufactured and/or supplied by STANDARD HORIZON against defects in materials and workmanship under normal use and service for a period of 3 years from the date of purchase.

In the event of a defect, malfunction or failure of the Product during the warranty period, Standard Horizon's liability for any breach of contract or any breach of express or implied warranties in connection with the sale of Products shall be limited solely to repair or replacement, at its option, of the Product or part(s) therein which, upon examination by STANDARD HORIZON, appear to be defective or not up to factory specifications. STANDARD HORIZON may, at its option, repair or replace parts or subassemblies with or reconditioned parts and subassemblies.

To receive warranty service, the purchaser must deliver the Product, transportation and Insurance prepaid, to STANDARD HORIZON (Marine Division of Vertex Standard) - Attention Factory Service - 10900 Walker Street - Cypress, CA 90630, include proof of purchase indicating model, serial number and date of purchase.

STANDARD HORIZON will not warrant installation, maintenance or service of the Products. In all instances, STANDARD HORIZON's liability for damages shall not exceed the purchase price of the defective Product. This warranty only extends to Products sold within the 50 States of the United Stated of America and the District of Columbia.

STANDARD HORIZON will pay all labor and replacement parts charges incurred in providing the warranty repair service except where purchaser abuse or other qualifying exceptions exist. The purchaser must pay any transportation expenses incurred in returning the Product to STANDARD HORIZON for service.

This limited warranty does not extend to any Product which has been subjected to misuse, neglect, accident, incorrect wiring by anyone other than STANDARD HORIZON, improper installation, or subjected to use in violation of instructions furnished by STANDARD HORIZON, nor does this warranty extend to Products on which the serial number has been removed, defaced, or changed.

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